



EDUCATION STANDARD CAN BE IMPROVED BY INTEGRATING ICT IN EDUCATION

Mrs. Mayuri Jain¹ | Dr. Rama Tyagi²

¹ Assistant Professor, Department of Education, Jain College, Gwalior, India.

² Principal, IPS College, Gwalior, India.

ABSTRACT

Information and Communication Technology (ICT) can be utilized for the education sector. Education includes online, distance and part time education. There are unlimited applications of ICT in the real world. This paper is emphasized on the education field. Traditional Non-formal education system process includes activities like admission, Individual Contact Programmes, Exam for any course in a University or Institution. In this process ICT can play a great role in all the activities by providing a lot of benefits to students, teachers, parents and Universities itself. ICT can be used for providing education to the people who are not able to come to school due to various constraints. ICT can play great role in formal and non formal forms of education. The paper examines certain important issues related with the effective implementation of ICTs in all levels of education and provides suggestions to address certain challenges that would help in the implementation of ICTs in education and simultaneously enhancing Quality of education.

KEYWORDS: ICT, IT, Education, MIS, Quality Education.

1. INTRODUCTION:

The Information and Communication Technology (ICT) is an umbrella term that includes any communication device or application, encompassing: radio, television, cellular phones, computer, and network hardware and software, satellite systems and so on, as well as the various services and applications associated with them, such as videoconferencing and distance learning. When such technologies are used for educational purposes, namely to support and improve the learning of students and to develop learning environments, ICT can be considered as a subfield of Educational Technology. ICTs in education are being used for developing course material; delivering content and sharing content; communication between learners, teachers and the outside world; creation and delivery of presentation and lectures; academic research; administrative support, student enrolment etc. IT has become a buzzword while talking about technology and its applications. IT is used in various business and management functions but not in the improving the quality of education. Quality of education has been issue of concern in the absence of standard parameters of to measure the quality. The hardware, software, the methods and how they are required or used in acquiring, storing, processing and displaying data and information is collectively known as Information Technology (IT). Also on other hand, many developments and achievements took place in communication technology sector after and Second World War. Both of these technologies became complementary to each other means progress in one alone is not much beneficial. Hence IT and CT started moving together and a new term was coined named as Information and communication Technology (ICT). Convergence of these two technologies gave birth to ICT. Education system includes formal and Non-formal forms of education at various levels of education. Teaching is imparting knowledge or skill whereas learning is skill acquisition and increased fluency. Usage of ICT is one of the way by which India's large population base can be effectively reached. Moreover in enhancing the quality and delivery of services through ICT-especially in case of developing relations with citizen- Government will be better positioned. Passive learning occurs when students use their senses to take in information from a lecture, reading assignment, or audiovisual. Traditional lecture is not an effective learning environment for many of our students because so many students do not participate actively during a traditional lecture. This is the mode of learning most commonly present in classrooms whereas active learning involves the student through participation and investment of energy in all three phases of the learning process (input, operations, and feedback). This type of learning is more apt to stimulate higher cognitive processes and critical thinking. In the past few years there has been a paradigm shift in curriculum where teacher acts as a facilitator in a student centered learning. In Student centered learning focus is on the student's needs, abilities, interests, and learning styles with the teacher as a facilitator of learning. Here students have to be active responsible participants in learning process. Teacher has key role in the whole process whereas in case of ICT based education, various ICT tools are supplemented to make the teaching-learning process effective. With the help of blended learning, total time devoted to teaching can be decreased. A survey says that there was a sense of pride created and interest generated among the teachers and students for gaining ICT and its privileges. ICT has the potential to remove the barriers that are causing the problems of low rate of education in any country. ICT as a tool can overcome the issues of cost, less number of teachers, and poor quality of education as well as to overcome time and distance barriers. In this paper how learning through ICT can be made effective and easier for improving the quality of both formal and non-formal

forms of education. Section 2 explains ICT tools, section 3 explains ICT application for quality improvement in formal and Non-formal education, section 4 shows ICT for Content development section 5 shows ICT and teachers Training whereas section 6 shows certain challenges and their solution for the implementation of ICT in the education sector.

2. ICT TOOLS:

Today ICTs including laptops wirelessly connected to the Internet, personal digital assistants, low cost video cameras, and cell phones have become affordable, accessible and integrated in large sections of the society throughout the world. It can restructure organizations, promote collaboration, increase democratic participation of citizens, improve the transparency and responsiveness of governmental agencies, make education and health care more widely available, foster cultural creativity, and enhance the development in social integration.

ICT stand for information and communication technologies are defined, as a "diverse set of technological tools and resources used to communicate, and to create, disseminate, store and manage information". These technologies includes computers, computer works stations, display facilities, hardware, software recording and processing system for sound, still and moving pictures, graphical calculator, the internet, broad casting technologies (Radio and Television) and other wide range of communication facilities. It may also be defined as use of hardware and software i.e. storage, retrieval, processing, communication and enhancing cultural upliftment. ICT makes the classroom learning interesting and effective, self-learning easy and successful and lifelong learning possible for all. By 1990, the choice of technologies for education was limited because these were expensive and required high skilled technicians to create and use them. At that time Radio, TV, Overhead Projector, Slides Projector etc. were the best example of technology for use in teaching- learning process. But recently technology applications in education no longer are limited by convenience, cost and their potential.

In recent years there has been a groundswell of interest in how computers and the internet can best be harnessed to improve the efficiency and effectiveness of education at all levels and in both formal and non-formal settings.

With the arrival of internet and broadband connections to schools, the applications of IT knowledge, skill and understanding in all subjects become a reality. This change in emphasis has resulted in a change of name for IT to ICT i.e. Information and Communication Technology. Thus Information Technology (IT) comprises the knowledge, skills and understanding needed to employ information and communication technologies appropriately, securely and fruitfully in learning, employment and every life

Different scholars stated the meaning of ICT in different ways. Some of the definitions of ICT is given here which would help to explain the meaning of ICT.

According to Raghavan (2000) ICT refers to a range of technologies, which includes computers, computer work situations, display facilities, hardware, software, recording and processing systems for sound, still and moving pictures, graphics, calculations and a wide range of communication facilities.

Mahajan (2002) defined ICT as the modern science of gathering, storing, manipulating, processing and communicating desired types of information in a specific environment.

According to UNESCO, ICT is a scientific, technological and engineering discipline and management technique used in handling information, its application and association with social, economical and cultural matters.

There are various ICT tools available which can be utilized for the knowledge creation and dissemination in the modern world. Tools include Radio, T.V, Internet, Mobile phone, Computer, laptop, tablets and many other hardware and software applications. Certain ICT tools like laptops, PCs, mobile phones, and PDAs have their own implication in Education. These devices can be used in imparting education and training for teachers and students. Many of the ICT tools are much hyped but have not given fruitful results till now. Use of radio for pedagogical practices has been very much popular in past and is still in use in India by IGNOU. But One-to-many broadcast technologies like radio and television are seen as less revolutionary ICTs in education, as their usage is seen as reinforcing of traditional instructor-centric learning models, unlike computers, which many see as important tools in fostering more learner-centric instructional models. Successful ICT initiatives meet three intertwined objectives: availability, access, and demand. Educational ICT tools are not for making educators master ICT skills themselves, but for making educators create a more effective learning environment via ICT. Teachers can utilize ICT tools to get benefits from using these tools in the areas of content, curriculum, instruction, and assessment. ICTs include fixed-line telephony, mobile telephony, newspapers, radio, television, radio trunking, very small aperture terminal (VSAT), computer, and internet must be accessible to rural public as per their demand.

3. ICT application for quality improvement in formal and Non-formal education:

ICT applications are becoming indispensable parts of contemporary culture, spreading across the globe through traditional and vocational education. In Indian scenario, mainly education system has three tiers primary (including nursery and preprimary), High school or secondary level (High and senior secondary levels) and the college or higher level (including college, university levels). In all these levels of education ICT can be utilized for better teaching learning process and improving quality of education. Using multimedia in education results in the increasing productivity and retention rates, because people remember 20% of what they see, 40% of what they see and hear, but about 75% of what they see and hear and do simultaneously. Interactive whiteboard helps teachers to structure their lessons, supports collaborative learning, can help to develop student's cognitive skills, enables ICT use to be more integrated into classroom. Government of India has announced 2010-2020 as decade of innovation. Reasoning and critical thinking skills are necessary for innovation. Foundation of these skills can be laid only at primary level of education. Students who enter school are very curious, creative, and capable of learning many things. At this level, explanation through picture is worth than thousand of words is very much true in case of teaching-learning process. Thus, ICT in the initial stages of education will help young people come to terms with what lies ahead. Students studying at this level take much interest in cartoons. They understand more through animated pictures. Hence if the same environment is created in schools by using ICT for teaching kids at primary level may bring drastic changes in the education scenario. Nursery students can be taught by showing pictures, animals, fruits etc. With the help of ICT tools students at this level are able to grasp a lot by hearing voices or sounds and animated motion of various animals. Language learning is also taught at this level. To know a new language at this age is easier as compared to other levels. Multimedia projector & computer can be used to teach phonetics and pronunciation. Such type of teaching and learning retains for long time in the minds of the children. At high school level subjects like History, Geography, Political science, Physics, Chemistry, Biology, Physical education etc are taught. Lessons in these subjects can easily be taught by showing small movie related with the subject to create interest among the students. Such type of movies and related multimedia material is easily available at academic repositories and from various related sites with the help of Internet. Internet is basic tool which can be utilized by teachers and students to find any information on any topic. This type teaching-learning makes the environment very interactive and is liked by students. Educational and practical CD's available in the market make this task easier to implement. At college level various facilities like computers, Electronic Board, Edusat facility initiated by various state Governments, MM projector and other peripheral devices related with teaching learning process are easily available. Repositories are libraries where these digital resources are stored and provide teachers, students, and parents with information that is structured and organized to facilitate the finding and use of learning materials regardless of their source location. Various programs running on Edusat are also very helpful for the students. Soft skill program can help students in getting their placements in reputed Multi National Companies (MNCs). State level quiz and seminar can also be conducted with the help of Edusat infrastructure and can be transmitted throughout all institutes. Edusat can be used for providing training to teachers on the latest subjects and technologies and can save lot of time and money of governments. In Haryana Edusat project is being implemented at school and college level and is being used for transmitting lectures according to syllabi. Out of all these activities some of these may be performed well with the help of ICT Tools. In the distance education ICT can be used for better management of records by

making a complete database of all the students in various courses. Once the students are enrolled, a unique number is generated called reference number and it is provided to the particular students.

Table 3: The Four Rationales for Introducing ICT in Education

Rationale	Basis
Social Basis	Perceived role that technology now plays in society and the need for familiarizing students with technology.
Vocational Basis	Preparing students for jobs that require skills in technology.
Catalytic Basis	Utility of technology to improve performance and effectiveness in teaching, management and many other social activities.
Pedagogical Basis	To utilize technology in enhancing learning, flexibility and efficiency in curriculum delivery.

4. ICT for Content development and administration:

Only presence of ICT in education sector is not sufficient there is also great need for development of good and relevant quality content. ICT can be utilized for the major areas which are content and administration. In this area certain initiatives have been taken at state and Centre levels. For content development in India certain initiatives have been taken for creating digital repositories and learning objects. Such initiatives include Sakshat portal of Govt. of India (GOI), National Programme of Technology Enhanced Learning (NPTEL) and Multimedia Educational Resource for Learning and Online Teaching (MERLOT) which create quality digital content for different levels of Education. Certain states have also taken a step forward to bring transparency in the education system through ICT. With the help of such a transparent system everyone including citizens, schools, zonal offices, district offices, regional offices, and various branches at the headquarters can share information using the Web-enabled software. Information for all stakeholders—students, teachers, and administrators—is available online through the Directorate's Web site (edudel.gov.in) this includes information on admissions, mark sheets, teacher attendance, transfers, and pay slips etc. Certain initiatives like all correspondence may be done electronically, attendance of staff may be recorded daily online to the directorate, major notices, information regarding implementation of various Government schemes can be easily applied and can be shared by other departments as well for making improvement in the present system. Such types of initiatives provide transparency in the society which is the major requirement of the people in the present day. There may be many more examples of such initiatives but the need of the hour is to replicate related interoperable projects showing great impact on the society. United Nations Educational Scientific and Cultural Organisation (UNESCO) has published a summary of case studies conducted in nine countries in different parts of world and most of these studies reflect the necessity of having multi-prong strategies for teacher education and to improve their expertise. Existing Open and distance education systems use different technology options for delivering content-Edusat, other TV and Radio channels. All these options use ICT. A local area network at school level can enable automation of a variety of processes. Beginning with library automation, locally cached offline access to internet resources, office automation, maintenance of records, student tracking, resource planning, using the existing ICT infrastructure will increase efficiencies. At the same time benefits in savings of cost, time and effort will also be available.

5. ICT and teachers Training:

In the modern world of ICT there is decentralization of knowledge source. Technology is only a tool and it must be utilized only to remove the barriers and challenges present in the existing system. ICT provides opportunities to complement on the job training and continuing education for teachers in a convenient and flexible manner. Use of ICTs in education requires major shift in the way content is designed and delivered. New technologies cannot be imposed without enabling teachers and learners to understand these fundamental shifts. Ongoing training is necessary for the trainers in institutions and organizations who are engaged in the design of curriculum, teaching materials and delivery of ICT-enabled education. ICT is applied in their teaching practices as well as for delivery for these trainings. In order to implement ICT-driven distance education programmes, the teachers must first understand and be comfortable with the technologies. They must be given opportunities for acquisition of a new knowledge. This can begin by promoting computer-training programmes for teachers. Use of ICTs for teacher training has been recognized by the governments of most South Asian countries and teacher training programmes like Intel Teach across India, Pakistan, and Sri Lanka; Microsoft Shiksha in India; and several other initiatives in Nepal and Bhutan are focused on using ICTs for training teachers [6]. The International Society for Technology in Education (ISTE) has created the most comprehensive set of ICT standards for teachers, students, and administrators.

Why to integrate?

Because changes in technology, demography, and internationalization are driving education system to evolve to an open flexible education (or learning) environment depicted in figure 1, which provides learners with quality services encompassing formal, informal, and non formal education. To this regard the "Learning for the Future (LFF)" project recently initiated by UNESCO IITE is a comprehensive approach to integrate ICT in education, renew pedagogy, and

enhance learning now and the future, which ensures teachers and students effective use of technologies and resources in strengthening the four pillars of learning for the 21st century: learning to know, learning to do, learning to be, and learning to live together.

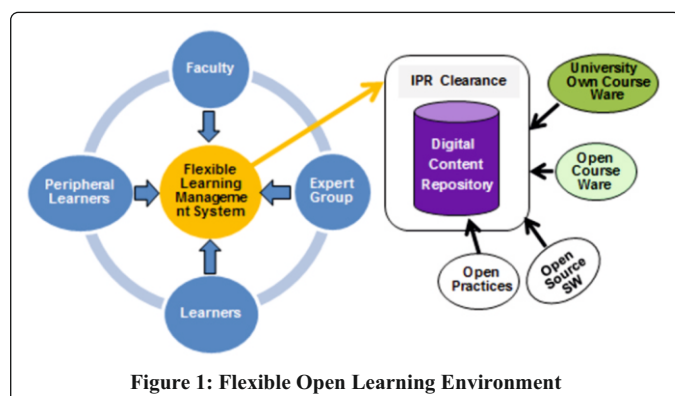


Figure 1: Flexible Open Learning Environment

What to integrate with ICT?

Technologies of digital learning platforms, conversation media and tools (SNS etc.), pedagogies for a new generation, open access to educational resources (OER, MOOCs etc.), international standards, cloud computing, nurturing teacher's competence, and open networking, policy making to meet societal changes are targets for effective integration.

It is only through education and the integration of ICT in education that one teaches students to be participants in the growth process in this era of rapid change. ICT also allows for the creation of digital resources like digital libraries where students, teachers and professionals can access. Such facilities allow the networking of academics and researchers and hence sharing of scholarly material. This avoids duplication of work. In view of ICT, education can be classified in three main categories:

- E-learning
- Blended Learning, and
- Distance Learning

E-Learning or Electronic learning is a general term used to refer to computer-enhanced learning. It is commonly associated with the field of advanced learning technology (ALT), which deals with both the technologies and associated methodologies in learning using networked and/or multimedia technologies. It is also known as online learning. Distance education provided the base for e-learning's development. E-learning can be 'on demand'. It overcomes timing, attendance and travel difficulties. E-learning has the following advantages:

- Eliminating time and geographical barriers in education for learners as well as teachers.
- Enhanced group collaboration made possible via ICT.
- New educational approaches can be used.
- It can provide speedy dissemination of education to target disadvantaged groups.
- It offers the combination of education while balancing family and work life.
- It enhances the international dimension of educational services.

Blended Learning is the combination of multiple approaches to learning. It is usually used to define a situation where different delivery methods are combined together to deliver a particular course. These methods may include a mixture of face-to-face learning, self-paced learning and online classrooms.

Face to face Learning refers to learning that occurs in a traditional classroom setting where a faculty member delivers instruction to a group of learners. This could include lectures, workshops, presentation, tutoring, conference and much more.

Self paced Learning provides the flexibility to learn according to the availability of learners' own time and pace, it occurs in a variety of ways such as: reading specific chapters from text book, studying course material presented through web-based or CD based course, attending pre-recorded classes or sessions, reading articles referred by faculty member, working on assignments & projects, and searching & browsing the internet.

Online Collaborative Learning involves interaction between learners and faculty members through the web; this interaction can occur in one of the following modes:

- Synchronous interaction.
- Asynchronous interaction.

Synchronous, means 'at the same time', it involves interacting with a faculty member and other learners via the web in real time using technologies such as virtual classrooms and / or chat rooms. On the other hand, Asynchronous means 'not at the same time'; it enables learners to interact with their colleagues and faculty member at their own convenience, such as interacting through email.

Distance Learning:

It is a type of education, where students work on their own at home or at the office and communicate with faculty and other students via e-mail, electronic forums, videoconferencing, chat rooms, instant messaging and other forms of computer-based communication. It is also known as open learning. Most distance learning programs include a computer based training (CBT) system and communications tools to produce a vital classroom. Because the Internet and World Wide Web are accessible from virtually all computer platforms, they serve as the foundation for many distance learning systems. ICTs also allow for the creation of digital resources like digital libraries where the students, teachers and professionals can access research material and course material from any place at any time. Such facilities allow the networking of academics and researchers and hence sharing of scholarly material and leads to quality enhancement in teaching and learning.

6. Challenges and solutions of applying ICT for learning:

Certain challenges also exist for the ICT based teaching learning. One of the great challenges for quality control in education is lack of standards for parameters to measure the quality of education. For the solution of this all the accreditation bodies like NAAC, NBA, AICTE, CBSE and other authorities must sit together and circulate a standard list of parameters to decide the quality of education. Development of ICT has changed the epic centre of knowledge and hence in many of the cases student is more informed than the teacher. Teachers lack adequate qualification and training and their lesson plans are most often outdated or irrelevant. Setting up the ICT devices can be very troublesome. It is expensive to afford it is hard for teachers to use with a lack of experience using ICT tools. These reasons destroy the available quality of education. ICT enabled distance education, to a great extent, can combat this problem. One of the important barriers is lack of trained teachers to exploit ICT proficiently. Most of the teachers are not willing to introduce new technologies to themselves first and subsequently to their students. There is resistance from teachers, basically from older teachers as compared to younger ones, to apply ICT in their subject. Hence teachers need to update their knowledge and skills as per change in the curriculum and technologies. At present, ICT in school education is strictly limited to a handful of elite schools. Beyond that, it's just a computer lab that's held apart from the conventional educational process. Though computers came to Indian classrooms in the year 1984-85, the level of adoption of modern technology in the teaching and learning process has been limited and uneven. Various ICT tools must be available and it must be accessible at demand. Many schools have limited resources for buying books, stationery, furniture and other classroom materials. Role of private sector providing services in such sectors may be taken into account. Rural population may not be able to pay hefty amount to utilize such ICT resources for education. One of the major challenges in the implementation of ICT in education is the initial thinking that is based on the technology. ICT hardware and software are not designed as per educational purposes rather they are designed for general purpose. One first thinks about the available technology and then a try is being made to apply it into education field, but if we look at in reverse way then possible outcomes may be more useful and may give good results. As per latest tradition only special subject like IT or ICT is available and that is also optional one there is need for to have basic knowledge of computers and IT to utilize various ICT tools to be used for teaching learning. Only computer teachers would not be able to carry this important mission of being agents of change. To sort out infrastructure problems for providing ICT education in schools one can split the screen in half vertically and at two sets of an application can be displayed and used by two users (students) simultaneously. Because one student may use the keyboard and another may use mouse, each student can work independently of the other. The survey done in 2007 in two highly ICT enabled states Gujarat and Karnataka says that Access to government school students to ICT tools outside schools is in general low. The access of private school students to such devices is comparably better. It also shows that one of the challenges to be met is also of digital divide in private and Government schools and moreover in rural and urban schools also. Major challenge for educators and trainers is how to develop learning materials for delivery on available ICT tools including mobile devices. The learning materials should be in manageable learning chunks and should make use of multimedia. There are many advantages of using learning objects in mobile delivery including: they can be re-used and changed without affecting other learning objects, and they can be stored in an electronic repository for remote access at any time. Barriers include costly supportive infrastructure, developing online material can be expensive and time consuming, quality, validity of online material, lack of flexibility in already prepared study material. A lot of information available online may dissuade student learning. Students can feel isolated in absence of classroom like environment. Computer Programmes at various levels of quality parameters can be used to control, manage and put strict discipline in the campuses through use of computer application for Curriculum development, Teaching and learning, Research and extension, Governance and leadership, infrastructural facilities and use of expert system in suggesting intel-

lignant decisions to top management in policy making and other important areas in higher education.

18. Ally Mohamed, *Mobile Learning: Transforming the Delivery of Education and Training*, Pp 279-281, AU Press (2009) Available at www.serc.Carleton.edu

Potential Drawbacks-cum-Challenges to Using ICT in Education:

While using ICTs in education has some obvious benefits, ICTs also bring challenges. First is the high cost of acquiring, installing, operating, maintaining and replacing ICTs. While potentially of great importance, the integration of ICTs into teaching is still in its infancy. Introducing ICT systems for teaching in developing countries has a particularly high opportunity cost because installing them is usually more expensive in absolute terms than in industrialized countries whereas, in contrast, alternative investments (e.g. buildings) are relatively less costly (UNESCO, 2009).

The four most common mistakes in introducing ICTs into teaching are

- i) Installing learning technology without reviewing student needs and content availability;
- ii) Imposing technological systems from the top down without involving faculty and students;
- iii) Using inappropriate content from other regions of the world without customizing it appropriately;
- iv) Producing low quality content that has poor instructional design and is not adapted to the technology in use (UNESCO, 2009). Although ICT offers a whole lot of benefits there are some risks of using ICT in education which have to be mitigated proper mechanisms.

7. CONCLUSION:

Quality in education through ICT and its awareness among stakeholders will have positive impact on the society. ICT can be helpful in quality and standards of education by implementing it in various phases of education. ICT can be employed in formal and Non-formal types of education and would eventually make the learners employable and socially useful part of the society. By employing ICT in teacher training can save a lot of money of the Government. Moreover a lot of qualitative improvement can be seen as resource persons for the training can be best of the world. By employing ICT in administration can help in solving the problem of Absenteeism of students and teachers. Good quality content is one of the major issues and directly affects the standards of education and quality. By overcoming the certain challenges involved in the process of education can help a lot in this side. Conclusively a lot of quality improvement is possible after careful and planned implementation of ICT in education by various stakeholders.

REFERENCES:

1. Ahmed M Iqbal , Lentz Erin C. , Enhancing the livelihoods of the Rural poor through ICT: A knowledge map Bangladesh Country Study , working paper no. 10 (2008)
2. Arora, P., The ICT laboratory: Analysis of computers in public high schools in rural India, *AACE Journal*, 15(1), 57-72. (2007)
3. Ramana Murthy B.V, Moiz Salman Abdul, Sharfuddin Mohammed , Designing a web education Model for effective teaching learning process , Proceedings of the 4th national Conference-INDIACom, Computing For Nation Development, BVICAM (2010).
4. Sharmila et. Al, ICT in Education and Society, Proceedings of the 6th national Conference-INDIACom, Computing For nation Development, BVICAM (2012).
5. Molnar Gyongyver, —New ICT Tools in Education – Classroom of the Future Project Available at www.infodev.org
6. Marmar Mukhopadhyay ,Universal Quality School Education and Role of ICTI , available at www.ciet.nic.in
7. Available at www.iste.org
8. Linden Leigh L., Complement or Substitute? The Effect of Technology on Student Achievement in India, Working paper no.17, (2008).
9. Information and Communication Technology for Education in India and South Asia, Essay II , ICT in School Education (Primary and Secondary), by Info dev and Price White Coopers (PWC) (2010) .
10. Available at www.edudel.gov.in
11. Chavan V.M, Gaikwad A.T,kulkarni M.A , Computer application in management of quality in higher educational institutes in Maharashtra , a study, Proceedings of the 6th national Conference-INDIACom, Computing For nation Development, BVICAM (2012).
12. Bhardwaj Vivek, ICT Usage in 1000 Schools of India Article Cover story in Digital learning, November (2007)
13. Dogra Deepak, Information and Communication Technologies (ICT): Benchmarking E-Government services to citizens in India Pg 192-199
14. Reddi Usha Vyasulu, Sinha Vineeta , ICT use in education, Meta-survey on the Use of Technologies in Education, Pp 245-252, UNESCO (2003)
15. Kumari Mitakshara , Policy Coherence in the application of ICTs for Education in India & South Asia, Price whitehouse Coopers (PWC), 2009
16. Govt. of India, —National Policy On Information and Communication Technology (ICT) In School Education —,Draft version 1.5, Department of School Education and Literacy ,Ministry of Human Resource Development (2009).
17. Available at www.unesco.org